

# **Influence of Industry Advisory Boards on Construction Management Programs' Curriculum and Content**

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The vast majority of construction management programs are guided and advised by a board made up of professional's representative of industry and/or the graduates of the program. For the most part these boards are the "eyes and ears" of industry and are tasked with providing advice and support to a construction program to ensure that the graduates are well-prepared for their upcoming career in the architectural, engineering, and construction (AEC) industry. Organizations such as the American Council for Construction Education (ACCE) requires each program seeking to be accredited or to maintain their accreditation to have an industry advisory board that is involved with the program within very specific requirements. This paper studied the influence that industry advisory boards have had over construction management programs by performing a survey that targeted both Program Directors and Program Advisory Boards. The methodology was set up to query CM program directors and industry professionals to reveal their thoughts and ideas as to how the relationship is (and should be) between the program and the advisory board. The study shows that the overall effectiveness of an advisory board is dependent on a large number of factors, including the culture, values, and priorities of the institution, program, and the board itself.

**Key Words:** Accreditation, ACCE, AEC, Curriculum, Industry Advisory Board

## **Introduction**

The practice of voluntary advisory boards to give assistance and advice to educational programs is common across many academic disciplines, regardless of their field of study. The vast majority of universities offering accredited degree programs in construction management (CM) have established some form of advisory structure composed of practicing or retired professionals who are called upon to help support the educational program in various ways. This structure is referred to in a variety of ways, including "board," "council," or "committee," and the members may be called "advisors," "visitors," or "associates" (Genheimer and Shehab, 2009). The construction industry is in a constant state of change because of economics, market forces, labor resources, new technologies, and government regulations. Similar to the industry, CM programs have to mirror these changes to ensure their students are "job-ready" upon graduation (Benhart and Shaurette, 2011). For the most part these boards are the "eyes and ears" of industry and are tasked with providing advice and support to a construction program to ensure that the graduates are well-prepared for their upcoming career in the architectural, engineering, and construction (AEC) industry.

Since the driving force behind the management of future construction projects are graduates from construction management programs, programs are tasked with preparing students and graduates with the necessary knowledge, skills, and experience to achieve success in their chosen construction fields. The fields include working for general contractors; design and engineering firms; specialty contractors; consulting firms; owner's representatives; building inspectors; plan examiners; quantity surveyors; facility managers; and financial institutions. The connection between the academic theory taught in the classroom and the "on the job" reality is nexus of program faculty and industry professionals that sit on the industry advisory board (IAB). This relationship is essential in helping the programs keep their curricula content consistent and current with what is happening in the field. Construction education programs are somewhat unique as compared to other academic programs in that they rely heavily on advice (in some cases approval) from industry as to how the program educates students. Reliance on industry is both self-imposed and externally required by organizations or agencies that oversee and accredit construction education programs. This relationship with industry manifests itself in the form of an IAB of professionals that draws mostly from companies that hire students from the program they advise. In many cases the IAB members are also alumni from the program. On most issues, industry is the preeminent source of information for assisting the program in remaining current in

their discipline, providing creative ideas for program implementation, and ensuring graduates of the program are ready to meet the many challenges the AEC industry will present early in their careers. The purpose of this study is to examine the influence that industry advisory boards have over construction management programs by performing a survey that target both Program Directors and Program Advisory Boards.

## Background

Generally speaking, in the published literature on organizational effectiveness, construction management advisory boards in particular, the factors and relationships that shape the operation and effectiveness of these boards are ill defined and not well understood. Some studies show that there is a discrepancy between what the industry wants and what higher education offers (Smallwood, 2002, Chileshe and Haupt, 2007). The overall inference of the information collected in the literature review determined that it is recognized that the industry point-of-view is important in defining the necessary skills of qualified CM graduates (Souder & Gier, 2006). Thus, the collaboration between industry and university is a prerequisite to reducing the discrepancy of important concepts and trends. It is evident that frequent communication between industry and academia can improve the CM curriculum and program (Lee et. al., 2011). Accrediting bodies for construction programs such as The American Council for Construction Education (ACCE) promote collaboration between constructor educators and industry by requiring interaction between industry partners and educators (Hynds & Smith, 2001).

ACCE standard for accreditation, Document 103, Section 7.1 states that:

7.1.1 Construction is a practice oriented profession. Therefore, it is required that an advisory committee, consisting of representatives from the construction industry, be actively involved in an advisory role for the construction program.

7.1.2 The committee should meet at least once a year for the purpose of advising and assisting the development and enhancement of the program. Although the composition of the committee should change periodically, there should be provisions to ensure continuity. The composition of the committee should be representative of the potential employers of the graduates of the construction program.

Investigation of ACCE accredited programs was the main focus in order to determine the aforementioned objectives. Review of these programs was performed within the context of influence their associated IAB had on the program. Journal articles and conference proceedings from construction, construction management, construction engineering, and construction engineering management were reviewed and analyzed to determine if any significant research has been done in this area of construction management education. While the use of advisory boards to support engineering educational programs is common, there is relatively little written and no known comprehensive research on what it takes to establish and operate an effective advisory program (Rooney and Puerzer, 2002). The goals, operation, and composition of advisory boards have significant variations across programs. Some schools have established valued and effective advisory boards, with excellent working relationships within the program. Other boards could be described as perfunctory, nonfunctional, or dysfunctional. Burt, et. al., (2006) conducted a survey to establish a benchmark for industry advisory committees. The authors state that the vague ACCE standard for advisory committees is proscriptive and leaves substantial room for interpretation by individual programs. There is not even consensus on what to call these committees. The overall effectiveness of an advisory board is dependent on a large number of factors, including the culture, value, and priorities of the institution (Genheimer and Shehab, 2009).

## Methodology

To comprehensively evaluate and analyze the current trends prevalent in industry relevant to the relationship between IAB's and CM programs the methodology was set up to query CM program directors and industry professionals to reveal their thoughts and ideas as to how the relationship is (and should be) between the program and the advisory board. *Phase I* of the research was to conduct a comprehensive analysis of published articles and papers that are directly or indirectly related to involvement of IABs and their CM programs with the hopes of determining current best practices and how construction programs and their IAB's interact related to matters of curriculum and program implementation. *Phase II* was to develop questions synthesized from the literature review

to include in a survey sent out to two specific target groups; construction management program directors and construction management IAB members. All of the intended respondents are closely associated with construction management programs accredited by the ACCE. During Phase III emails were sent out to program directors which contained links to a website survey. Programs directors were asked to answer questions on link #1 and to forward link #2 to members or their respective IAB's (Appendix A). After allowing a three week period of time for a response, program directors who did not respond were contacted by telephone. Of the 76 schools contacted representing accredited or candidates for accreditation by ACCE, 30 construction management directors and coordinators from 20 different states completed the survey, for a response rate of 40 percent. The response rate of advisory board members is unknown as the distribution of surveys was at the discretion of program directors that chose to participate. The number and breadth of responses from construction management programs is sufficient to draw meaningful inferences regarding advisory board effectiveness (Likert Scale was used for survey questions: 5-strongly agree; 4-agree; 3-neutral; 2-disagree; 1-strongly disagree). The results are summarized in this paper.



*Figure 1: Locations of Participating Construction Programs*

## **Findings & Analysis**

### *Results from the Program Directors Survey*

The construction programs were divided into 3 major pools based on the students' enrollment, to see if there is a correlation between the program size and the IAB effectiveness. The program size was broken down as following: Small <100 students (20.7%), Average 100<students <200 (31%), and Large >200 students (48.3%).

### *Advisory Committee Names*

While ACCE standards require an "advisory committee", only 7% of the programs use the word committee in naming their advisory organization. Based on the program directors responses, the advisory committee name can be grouped in two main categories: Industry Advisory Board (51.7%), and Industry Advisory Council (31%).

### *Memberships and IAB Structure*

The IAB membership numbers ranged from one program to the other depending on the size of the program and its geographical location. Figure 2 represents the percentage of IAB membership in all construction programs.

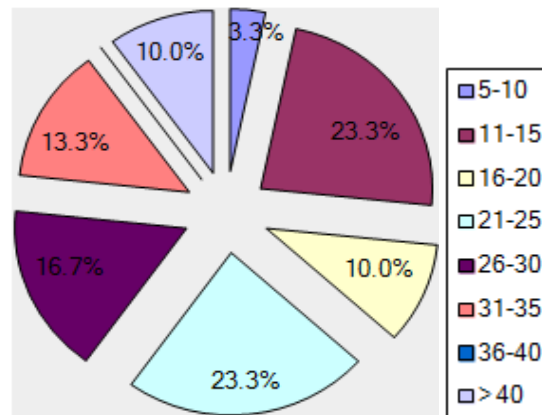


Figure 2: Percentage of IAB Membership

Typically IAB membership is chosen to represent industry sectors served by the program. Selection of new members is most often done either by the program director or based upon the recommendation of the other IAB members. Percentage of IAB Positions Held in the AEC Industry is presented in Figure 3.

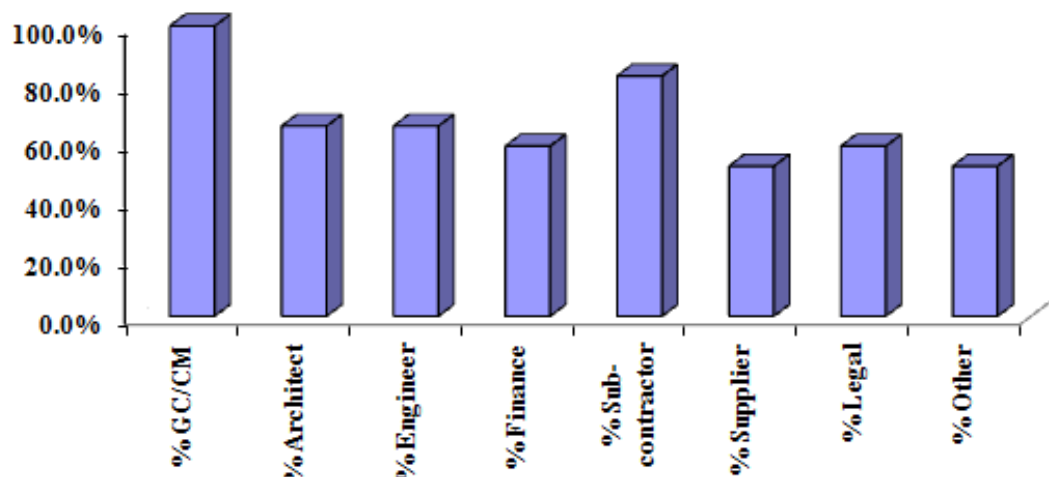


Figure 3: Percentage of IAB Positions Held in the AEC Industry

### *Program Directors Perception of IAB*

Using a 5 point Likert-scale (strongly disagree to strongly agree), respondents were asked 5 questions to assess program directors perceptions of IAB. Percentage of these results were calculated and presented in Table 1. Questions # 1, 3, and 5 were used to assess the level of influence the IAB has on curricular matters, the flexibility ACCE present on utilizing the IAB as a resource, and how the program directors feel they are fully utilizing the IAB respectively. The respondents tended to agree with these statements as the total % in agreement was 83.3, 72.4, and 86.7% respectively.

Questions # 2 and 4 were used to assess how active the IAB actually is and how the program directors feel the IAB understands the accrediting standards. The respondents tended to partially agree with these statements as the total % in agreement was 53.4 and 66.7% respectively. It was expected that IAB are not very active outside the times they meet as a group because as practitioners they have a busy schedule and they don't have a stagnant work place. But the authors were surprised from question # 4 response and the impression program directors have regarding the IAB members knowledge with ACCE standards in advising and/or influencing their program development.

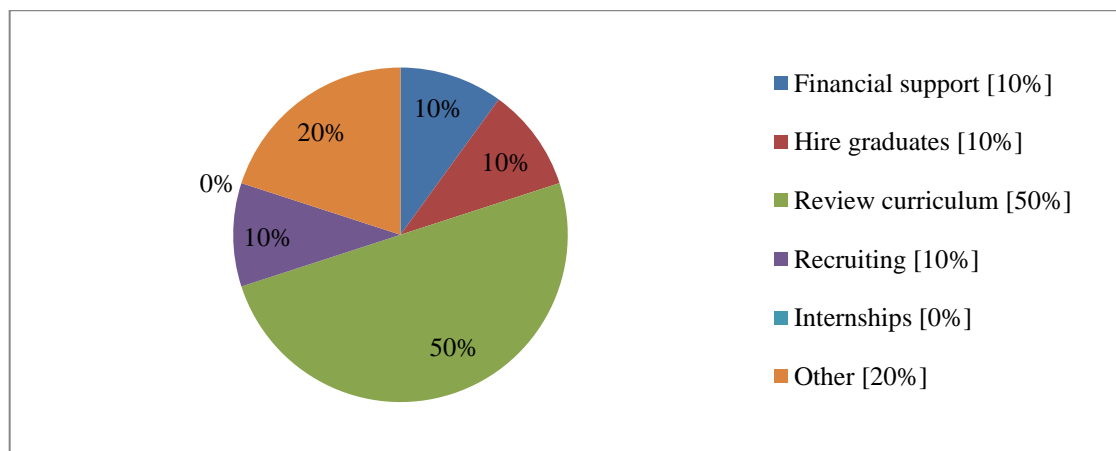
**Table 1***Program Directors Perception of IAB*

Answer Options	% Strongly Agree	% Agree	% Neutral	% Disagree	% Strongly Disagree
1. The IAB has significant influence on curriculum development and implementation within the program	33.3	50.0	10.0	6.7	0.0
2. The IAB is very active outside the times they meet as a group once or twice per year	36.7	16.7	23.0	20.0	3.3
3. The accrediting standards allow you sufficient flexibility in how you utilize the IAB as a resource for the program	31.0	41.4	20.7	6.9	0.0
4. The vast majority of the IAB members understand the accreditation standards regarding the role the IAB should play in advising and/or influencing your program development	16.7	50.0	20.0	10.0	3.3
5. As program director I utilize the IAB as a resource to the best extent possible	50.0	36.7	6.7	3.3	3.3

*Results from the IAB Survey*

The main objective of surveying industry advisory board members was to identify any differences or disconnects between the perceptions and experiences of the program director and the involvement of the board members themselves. A total of 76 program directors were contacted and asked to pass along the survey link to their respective industry advisory board members. For most questions on the survey there were 38 to 40 respondents spread out all of the programs contacted. No data is available or inferences made as to what programs the respondents represented.

Question 1 inquired as to what respondents thought was the most important role of the industry advisory board.

*Figure 4: IAB Roles*

Question 2 was a followup to question 1 and further explains the responses under the “other” category to include:

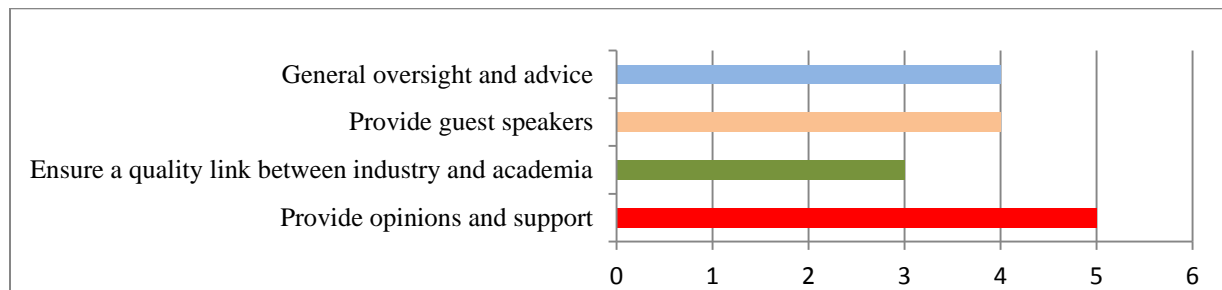


Figure 5: Other IAB Roles

Question 3 asked the respondents to identify the three most valuable contributions their industry advisory boards have made to curriculum and program content.

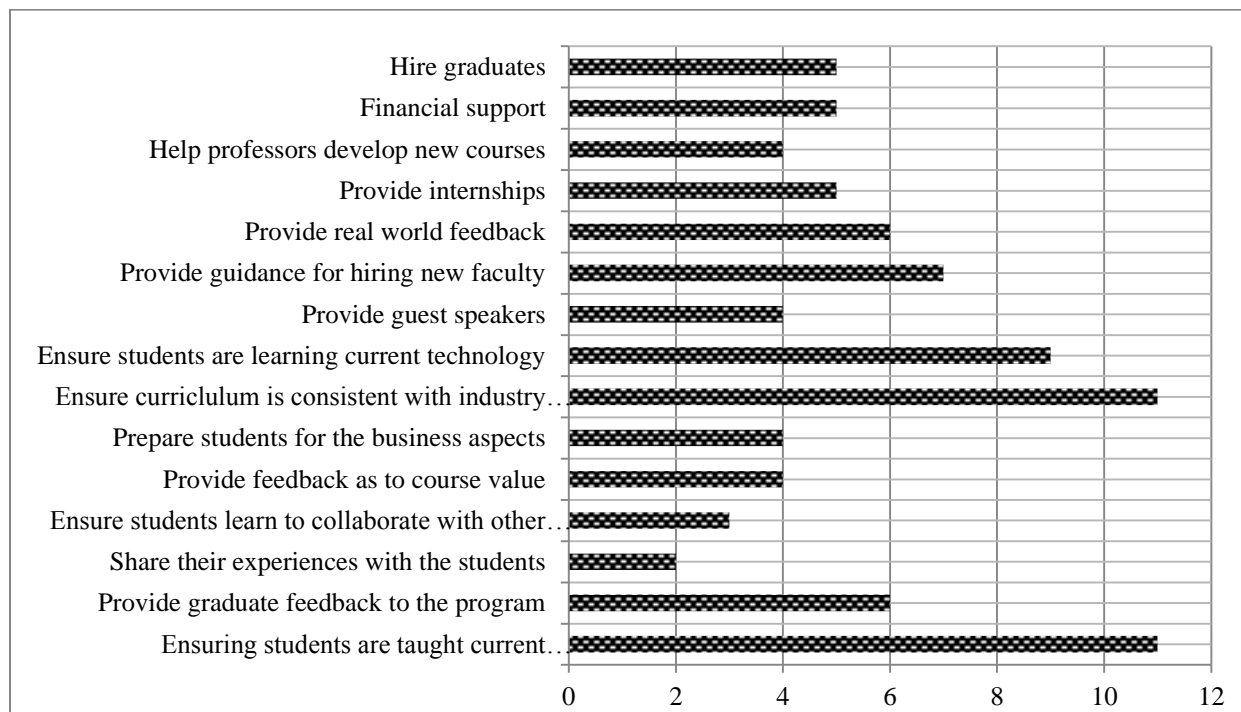


Figure 6: IAB Contributions to Curriculum and Program Content

Question 4 asked the respondents to rate a wide range of specific factors as they related to the program based on their experience with the program.

Questions # 1, 3, and 5 were used to assess the level of influence the IAB has on curricular matters, the flexibility ACCE present on utilizing the IAB as a resource, and how the program directors keep IAB informed. The respondents' % agreement was 84.2, 55.3, and 89.5% respectively.

Questions # 2 and 4 were used to assess how active the IAB actually is and how much the IAB understands the accrediting standards. The respondents tended to partially agree with these statements as the total % in agreement was 44.8 and 55.3% respectively.

Questions # 6, 7, 8, and 9 were used to assess the level of collaboration and understanding between the construction program represented by the program directors and their IAB. The respondents were satisfied with the existing type of process and relationship they have with each other as the total % of agreements was all more than 73%.

**Table 2**

*IAB Perceptions*

<b>Answer Options</b>	<b>%Strongly Agree</b>	<b>%Agree</b>	<b>%Neutral</b>	<b>%Disagree</b>	<b>%Strongly Disagree</b>
1. The IAB has significant influence on curriculum development and implementation within the program	28.9	55.3	13.2	0.0	2.6
2. The IAB is very active outside the times they meet as a group once or twice per year	5.3	39.5	34.2	21.1	0.0
3. The accrediting standards allow you sufficient flexibility in how the IAB is used as a resource for the program	5.3	50.0	39.5	5.3%	0.0
4. The vast majority of the IAB members understand the accreditation standards regarding the role the IAB should play in advising and/or influencing your program development	7.9	47.4	26.3	15.8	2.6
5. The program director does a good job of keeping the IAB informed on program matters	42.1	47.4	5.3	2.6	2.6
6. The IAB is used effectively as a resource for the program and is “listened to” in matters related to curriculum	44.7	42.1	5.3	7.9	0.0
7. Program leadership routinely interacts with IAB membership and incorporates their input on a regular basis	39.5	44.7	7.9	5.3	2.6
8. The IAB size is appropriate to be an effective advocate for the program	44.7	44.7	5.3	5.3	0.0
9. Program faculty interact on a regular basis with the IAB	18.4	55.3	18.4	5.3	2.6

*Cross-Survey Comparison*

Based on the responses from both surveys, it is clear that there is coherence between the program directors and the IAB. Both sides tend to agree on the same issues except one. IAB feels that the accreditation standards don't allow sufficient flexibility on how to use them as a resource for the program.

**IAB Recommendations**

The results of this research project have generated the following five recommendations/observations to be used as best practices for how IAB's influence and to assist CM programs.

1. IAB's or their appointed subcommittees should meet as needed outside the regular meeting times of the board to address issues that are time-sensitive and cannot wait for the yearly or bi-yearly cycle of meetings.
2. Program directors need to better educate the IAB regarding their role as advisors to the program within the accreditation standards.
3. Program directors need to make sure the IAB is better informed of the accreditation standards
4. Program faculty need to interact with IAB members on a regular basis especially relating to curricular matters
5. IAB should play an active role in curriculum development.

## Conclusions

The overall effectiveness of an advisory board is dependent on a large number of factors, including the culture, values, and priorities of the institution, program, and the board itself. This research has shown differing views of advisory board effectiveness and priorities among different programs as well as between program directors and board members. The significant response rate from the wide range of programs indicates that program directors appear to believe this topic is important and worthy of addressing and may help them in their interaction with their respective IAB's. The research has shown that industry is proactive in their approach to working with their respective programs. ACCE started holding a combined industry and educator event at their semi-annual meeting since 2010. These meetings driven by key leaders of the AEC industry, who have been very supportive of construction education, provide a forum to bring practicing industry professionals together to start the process of developing best practices for IAB members and how they interact with their respective programs. Based on the output of our survey, one key element should be added to the agenda of the "IAB Best Practices Event" which is covering the accreditation standards regarding the role the IAB should play in advising and/or influencing the program development.

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## **Appendix A**

### **Survey Questionnaires Links**

Survey link #1 to Program Director or Coordinator [http://www.surveymonkey.com/s/Curriculum\\_PD](http://www.surveymonkey.com/s/Curriculum_PD) and Survey link #2 to Industry Advisory Board members [http://www.surveymonkey.com/s/Curriculum\\_IAB](http://www.surveymonkey.com/s/Curriculum_IAB)